

# Dornoch

Medical Systems, Inc.

## Transposal Ultra Evac Technical Manual



**Model No.: UL-EV100**



**Serial No.:** \_\_\_\_\_

# Contents

Important Statements and Warnings .....	<b>1</b>
Important Statements and Warnings (French) .....	<b>2</b>
Introduction .....	<b>3</b>
Intended Use .....	4
Equipment Description.....	4
Technical Description .....	<b>5</b>
Specifications.....	5
Operations .....	<b>7</b>
Safety Features .....	8
Environmental Protection .....	8
Waste Disposal Accessories .....	8
MSDS Sheet for Bleach and Enzyme .....	8
Reusable Suction Reservoir Use and Processing.....	9
Instructions for Use.....	10
Processing Reservoirs.....	10
Reprocessing Reservoirs .....	10
Prepare Cart for Next Case.....	11
Replacing Bleach & Enzyme Bottles.....	11
Unit Information and Error Messages .....	12
Troubleshooting Guide.....	13
Symbols & Labels .....	14
Installation .....	<b>16</b>
Protective Packaging & Unpacking.....	16
Site Preparation.....	16
De-install/Disconnect Instructions.....	19
Equipment Storage .....	19
Maintenance .....	<b>20</b>
Qualifications for Service Personnel .....	20
Service Warnings .....	20
Additional Information .....	20
Routine Maintenance.....	21
Replacement Items.....	21
Fluid Paths and Wiring Diagrams.....	22
Preventative Maintenance .....	25

Company Information .....	<b>26</b>
Extended Warranty.....	<b>27</b>

#### List of Tables

Table 1 – Ultra Evac Specifications.....	5
Table 2 – Ultra Evac Utilities Needed for Installation .....	17
Table 3 – Ultra Evac Preventative Maintenance Schedule.....	25

#### List of Figures

Figure 1 – Ultra Evac Dimensions and Features .....	6
Figure 2 – Disposable Lid .....	7
Figure 3 – Ultra Fluid Cart with Ultra Evac Unit.....	7
Figure 4 – Coupler Insertion .....	10
Figure 5 – Cycle Complete Screen .....	10
Figure 6 – Options Screen .....	10
Figure 7 – Processed Lid .....	11
Figure 8 – Evac Chemical Bottles .....	11
Figure 9 – Ultra Evac Architectural Drawing .....	18
Figure 10 – Environmental Conditions .....	19
Figure 11 – Evac Fluid Flow Diagram .....	22
Figure 12 – Evac Wiring Diagram .....	23
Figure 13 – Evac Board Scematic .....	24

# Important Statements and Warnings



These symbols are used to alert the reader to important safety and precautionary information. When displayed on a device, it refers the user to accompanying instructions and identifies safety and precautionary information. For questions, please call Dornoch Medical Systems, Inc. at 888-466-6633.

Please read this manual and follow all instructions carefully. The words WARNING and CAUTION carry special meanings and should be carefully reviewed.

**WARNING:** The personal safety of the patient and/or user may be involved. Disregarding this information could result in injury to the patient and/or hospital staff.

**CAUTION:** These instructions point out special service or operational procedures including directions that should be followed to avoid damaging the device.

- **WARNING:** Before using this system, read and understand the information in this manual. Suction equipment should only be used by people that have had adequate training on the use of this type of equipment.
- **WARNING:** The Blood-borne Pathogens Standards, provided by the Occupational Safety and Health Association (OSHA), requires that all workers, having exposure to “potentially infectious materials”, should wear the correct personal protection equipment.
- **WARNING:** To avoid the risk of electrical shock, this equipment must be connected to electrical outlet with a protective earth ground.
- **WARNING:** Verify all access doors are securely in place before operating this unit.
- **WARNING:** Use only Dornoch Medical Systems, Inc. approved accessories. Do not connect items to this system that are not designed for or specified for use with this system.
- **WARNING:** No user serviceable parts inside the unit. Contact Dornoch Medical Systems, Inc. customer service if an issue arises. Only authorized service personnel should open any of the access covers on this equipment. User operation does not require access to these areas.
- **WARNING:** The unit is for use within the hospital and/or surgery center. The Ultra Evac is not for field transport or field use. The unit should be moved by trained personnel only; it is not designed as a portable device.
- **WARNING:** No incline planes of operation.
- **WARNING:** This unit uses both bleach and enzyme in its operation. When re-filling reservoirs, always wear the appropriate Personal Protective Equipment. Use only Dornoch Medical Systems, Inc. approved Bleach and Enzyme to avoid damage to the system components.
- **WARNING:** This equipment is not suitable for use in the presence of flammable anesthetic mixtures with air, oxygen or nitrous oxide. Is not intended for use with AP or APG equipment.
- **WARNING:** Hot Water Temperatures higher than 118 °F can cause damage to the unit.
- There are no known significant risks of reciprocal interference posed by the presence of this equipment or its operation in either the operating room suites or other areas when used during specific investigations and/or treatments.
- There are no known potential electromagnetic or other interferences between this unit and other devices located and/or operated within the area of the operating room suites.

# Avis Importants et Mises en Garde



Ces symboles sont utilisés pour avertir le lecteur d'importants pour la sécurité et les informations de précaution. Lorsqu'elles sont affichées sur un périphérique, il réfère l'utilisateur aux instructions d'accompagnement et identifie les informations relatives à la sécurité et précaution. Pour toute question, veuillez appeler Dornoch Medical Systems, Inc. au 888 466-6633.

Veuillez lire ce manuel et Suivez attentivement toutes les instructions. Les mots attention et précaution transportent des significations spéciales et devraient être examinés attentivement.

**ATTENTION:** La sécurité personnelle du patient et/ou utilisateur peut-être être impliquée. Abstraction faite de cette information pourrait entraîner un préjudice pour le personnel du patient et/ou l'hôpital.

**CAUTIONNEMENT:** Ces instructions point de service spécial ou de procédures opérationnelles, y compris des directions qui devraient être suivies pour éviter d'endommager l'équipement.

- **ATTENTION:** Avant d'utiliser ce système, lire et comprendre les informations contenues dans ce manuel. Équipements d'aspiration seulement doit être utilisée par les personnes qui ont eu une formation adéquate sur l'utilisation de ce type d'équipement.
- **ATTENTION :** Les normes de pathogènes véhiculées par le sang, fournis par l'Occupational Safety and Health Association (OSHA), exige que tous les travailleurs, d'exposition à des "matières potentiellement infectieuses", doivent porter l'équipement de protection individuelle approprié.
- **Avertissement :** Pour éviter le risque de choc électrique, cet équipement doit être connecté à la prise électrique avec une terre protectrice.
- **ATTENTION :** Vérifiez que toutes les portes d'accès sont solidement en place avant d'utiliser cette unité.
- **Avertissement :** Utiliser seul Dornoch Medical Systems, Inc. a approuvé accessoires. Ne branchez pas les éléments à ce système qui ne sont pas conçus pour ou spécifié pour une utilisation avec ce système.
- **ATTENTION :** Aucun utilisateur réparable l'unité. Service clientèle contact Dornoch Medical Systems, Inc. Si un problème se pose. Seul le personnel autorisé de service devrait ouvrir l'une des couvertures accès sur cet équipement. Opération utilisateur ne nécessite pas l'accès à ces zones.
- **Avertissement :** L'unité est destiné au sein du Centre hospitalier ou de chirurgie. Le Evac Ultra pas pour le transport de champ ou de champ utiliser. L'unité doit être déplacée par personnels formés uniquement ; il n'est pas conçu comme un portable devise.
- **ATTENTION :** Aucune incliné plans d'opération.
- **Avertissement :** Cette unité utilise à la fois bleach et enzymes dans son fonctionnement. Lors de la re-filling des réservoirs, portez toujours les équipements de protection individuelle approprié. Utilisez uniquement Dornoch Medical Systems, Inc. a approuvé Bleach et enzyme pour éviter d'endommager les composants du système.
- **ATTENTION :** Cet équipement n'est pas adapté à une utilisation en présence de mélanges anesthésiques inflammables à l'air, d'oxygène ou protoxyde d'azote. Est pas destiné à être utilisé avec l'équipement de point d'accès ou de la SGA.
- **Avertissement :** Hot Water températures supérieures à 118 °F peuvent causer des dommages à l'unité.
- Il n'y a aucune connus importants risques d'interférence réciproques posés par la présence de cet équipement ou de son fonctionnement dans les suites de salle d'opération ou autres domaines lorsqu'elle est utilisée au cours des enquêtes spécifiques ou des traitements.
- Il n'y a aucune connus potentiels électromagnétiques ou autres interférences entre cette unité et d'autres dispositifs situé et/ou exploitée au sein de la zone des suites des salle d'opération.

# Introduction

Dornoch's Transposal Ultra Evac is designed to empty, clean, disinfect and rinse the Ultra Fluid Carts. The Ultra Evac is used to process the Ultra Quad Cart (4 reservoirs) and the Ultra Duo Cart (2 reservoirs) after they have been used to collect fluids in the surgical procedure.

Two manuals are provided with this equipment and are shipped inside of the unit. Copies of these manuals are available to any Dornoch Medical Systems, Inc. customer upon request.

The two different manuals are as follows:

Instructions for Use Manual – This manual is designed to instruct users in the correct operation of the Ultra Evac as well as safety considerations associated with the unit.

Technical Service Manual – This manual includes operation instructions, installation & disconnection instructions, technical specifications, and preventative maintenance procedures for the unit.

This is the Technical Service Manual, and it is broken into seven sections including:

- *Introduction*
- *Technical Description*
- *Operation*
- *Installation*
- *Maintenance*
- *Company Information*
- *Limited Warranty*

As a supplement to these two manuals, instructional video(s) are available to assist maintenance personnel in their understanding of the equipment's operation and the maintenance procedures needed. If required, Dornoch service personnel can be contacted 24-hours a day at 888-466-6633.

## Intended Use

The intended use of the Transposal Ultra Evac is to process the Ultra Fluid Carts after they have collected surgical fluids. The Ultra Evac will empty, clean, disinfect and rinse the reusable suction reservoirs on the Ultra Fluid Carts.

## Equipment Description

The Ultra Evac is a standalone unit that can automatically process an Ultra Fluid Cart. The Ultra Evac empties, cleans, disinfects and rinses the Ultra Fluid Carts during the process. The Ultra System significantly reduces employee exposure to potentially infectious body fluids, while eliminating up to 70% of Operating Room red bag waste.

The Ultra Evac processes Ultra Duo and Ultra Quad carts for reuse. Once installed, operators simply connect the Ultra Evac to a used Ultra Fluid Cart with the Evac's Coupler. With a touch of a button the Ultra Fluid Cart is automatically emptied, cleaned, disinfected and rinsed. With the addition of a new single use lid, they are ready for reuse within the facility.

# Technical Description

## Specifications

**TABLE 1**

Item	Ultra Evac (#UL-EV100)
<b>Certifications</b>	ETL Listing - Class 1 Medical Device. Complies with the following: <ul style="list-style-type: none"> <li>IEC-60601-1: General Requirements for Safety</li> <li>IEC-60601-1-1: Safety Requirements for Medical Electrical Systems</li> <li>IEC-60601-1-2: Electromagnetic Compatibility - Requirements and Tests</li> <li>IEC- 60529 rating certification of IP41</li> <li>FDA 510K certification</li> <li>CAN/CSA Standard C22.2 No. 601.1</li> </ul>
<b>FDA Registration</b>	# 1954182
<b>Patents</b>	Patent Pending
<b>Installation</b>	Fixed
<b>Size</b>	20" W x 16" D x 28" H
<b>Weight</b>	100 lbs

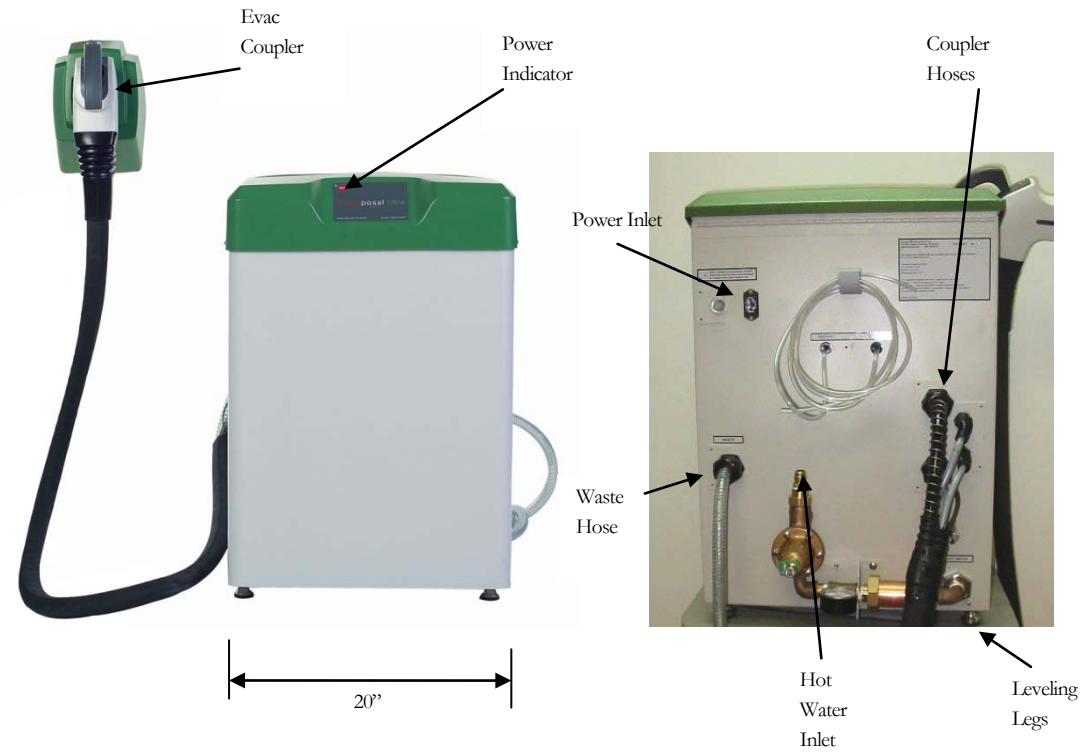
### Utilities

<b>Power</b>	115 - 120VAC, 60Hz, 6.0amps
<b>Water</b>	3/4" Hot and Cold, 55psi, 6.0gpm, Min. 110°F Hot, not to exceed 120 degrees F
<b>Drain</b>	1 1/2" – 2"
<b>Space</b>	24" W x 20" D x 33" H
<b>Additional Cooling</b>	None
<b>Flammable Rating</b>	Not suitable for use in the presence of flammable anesthetic mixture with air or with oxygen or with nitrous oxide.

### Operation

<b>Mode</b>	Continuous
<b>Cycle</b>	5 to 16 minutes
<b>Water Use</b>	5.0 to 10.0 gallons/cycle
<b>Enzyme Use</b>	2.85 to 5.7 ounces/cycle
<b>Bleach Use</b>	3.4 to 6.8 ounces/cycle
<b>Method of Sterilization</b>	N/A





**Figure 1 – Ultra Evac Dimensions and Features**

# Operation

The Transposal Ultra Infectious Fluid Management System consists of Ultra Fluid Carts for fluid collection and the Ultra Evac for fluid disposal. Ultra Fluid Carts collect up to 52 liters of surgical fluids without the need to tandem multiple suction canisters. In addition, each Ultra unit's on-board vacuum pump replaces or improves facility wall vacuum performance when inadequate suction is otherwise present.

Once connected to a 120 VAC electrical outlet, Cart reservoirs collect fluids from one to three separate sites. Ultra Duo Fluid Carts have two 16.5 liter reservoirs and Ultra Quad Fluid Carts have four 13.0-liter reservoirs. Reservoirs can be used with wall vacuum and/or the on-board vacuum pump.

A disposable lid (Figure 2) is used to make suction tube connections from the field to the Cart. The Ultra Duo uses two single use lids and the Ultra Quad uses four lids. New lids are pressed on to the top of cart reservoirs. Typically, only one sealed, cleaned and disinfected reservoir is used per patient. Carts are removed from the OR suite for processing after all reservoirs have been used, or at the end of the day.



**Figure 2 – Disposable Lid**

Cart processing is accomplished with an Ultra Evac Unit (Figure 3) located in an OR utility closet or decontamination room. Ultra Evac Units empty, clean, and disinfect reservoirs for reuse. The Ultra Evac Unit's water, drain, and sensor lines are easily connected to the Ultra Cart using a drip-less all-in-one coupler connection. Ultra Carts are powered by the Ultra Evac coupler connection during reservoir processing.



**Figure 3 – Ultra Fluid Cart with Ultra Evac Unit**

## Safety Features

The Ultra Fluid Carts have numerous built in safety features including:

- **Closed System Design.** The Ultra Fluid Carts are designed to confine and contain fluids during disposal. Personnel never open cylinders that contain collected fluids.
- **Interactive Controls.** The Ultra Fluid Carts' high-tech control system guides users through unit operation while monitoring key functions.
- **Disinfection Cycle Monitoring.** Continuous automatic monitoring of the disinfection cycle is accomplished with electronic sensors within the Ultra Evac unit.

## Environmental Protection

**Infectious Waste:** None

**Non-infectious Waste:** After the Ultra Fluid Cart disinfection cycle has been completed; the reservoirs and the disposables are non-infectious.

## Waste Disposal Accessories

There are no current accessories required for disposal from this unit.

## MSDS Sheet for Bleach and Enzyme

MSDS sheets are available upon request by calling Dornoch at 888-466-6633.

# Reusable Suction Reservoir Use and Processing

***Reservoir Processing.*** Designated OR, SPD, or housekeeping personnel shall empty, clean and disinfect used Ultra Fluid Carts with the Ultra Evac. Processing shall be accomplished in accordance with manufacturer's directions. While handling Ultra Fluid Carts, personnel shall wear personal protective equipment (PPE). Minimum PPE includes gloves, mask, and eye shield. After processing, wipe down the unit with an approved hospital grade contact disinfectant.

***Disinfection Verification.*** Daily visual verification of the Ultra Fluid Cart/Ultra Evac Systems disinfection cycle shall be completed using a Verification Log Kit (#TP-VL100). Continuous automatic monitoring of the disinfection cycle is accomplished with electronic sensors within the Ultra Evac unit. If an error is detected, the message shall be reported to an immediate supervisor.

***Disposable Lid Storage.*** A supply of new disposable collector lids shall be kept in a designated clean storage area, or near any point of use.

***Preparing Reservoirs for Use.*** A new disposable lid (TP-DL2800) shall be placed onto the cleaned reservoir in a designated clean area. The user must verify the white hydrophobic filter is in place on the lid. Verify the reservoirs are clean prior to installing a new disposable lid.

***Ultra Fluid Cart Cleaning.*** Ultra Fluid Carts should be processed when all of the collection reservoirs have been used or at the end of the day.

***Ultra Fluid Cart Transportation.*** Used Ultra Fluid Carts shall be sealed and transported to the Ultra Evac for immediate processing. Before processing the Ultra Fluid Cart, verify all of the ports on the disposable lids are capped.

# Instructions for Use

## Processing Reservoirs

Step 1 – Insert the coupler into the receiver and gently press the handle down. (Figure 4)

Step 2 – Verify that all reservoirs have green lids and that all of the ports are capped.

Step 3 – Follow the prompts on the cart to start the processing cycle.

Step 4 – When cycle is complete (Figure 5), verify the reservoirs are clean. (Proceed to Reprocessing Reservoirs section if needed.)

Step 5 – Press the Remove coupler button, remove the coupler from the receiver and place in the storage unit.



**Figure 4 – Coupler Insertion**

## Reprocessing Reservoirs

Step 1- Access the reprocessing options by pressing the Options button in the upper right corner. (Figure 5)

Step 2- Select the desired cylinder(s) and the cleaning cycle and then press the Start Process button to perform the selected cycle. (Figure 6)

### Reprocessing Cycle Descriptions:

**3L Soak** – Cycle applies 10 ounces of enzyme with 3 liters of water to help break up any clots that may be remaining in the bottom of the cylinder at the end of the cycle. Let the fluid soak for at least one hour for best results.

**Full Soak** – Cycle fills cylinder to the 13L (Quad) or 16.5L (Duo) mark along with about 10 ounces of enzyme. This cycle is used if there are spots on the cylinder that are not coming off during a wash. Let the fluid soak for at least one hour for best results.

**Rewash** – Cycle will attempt to clean the selected cylinder(s) again using wash water and enzyme. The cycle will apply the solution and pause several times to try to get the cylinder clean.



**Figure 5 – Cycle Complete Screen**



**Figure 6 – Options Screen**

## Prepare Cart for Next Case

Step 1 – Remove the used lids from each reservoir and discard according to your hospital policy. Processed lids can be identified by seeing that the filter has turned blue. (Figure 7)

Step 2 – Wipe down the cart with an approved contact disinfectant.

Step 3 – Roll the unit to a clean area and replace the lids.



Figure 7 – Processed Lid

## Replacing Bleach & Enzyme Bottles

**The Ultra Evac Unit's bleach and enzyme bottles must be replaced when indicated on the Cart's display during processing.**

**Replace only with Clorox Bleach 6% Sodium Hypochlorite.**

**Enzyme is Dornoch Ultra Enzyme.**

Step 1 – Remove lid and pickup tube from empty container. (Figure 8)

Step 2 – Open the new bottle, place the bottle into the top of the EVAC, insert the pickup tube into the bottle and secure the lid.

Step 3 – Dispose of the empty bottle per hospital policy.



Figure 8 – Evac Chemical Bottles

## Unit Information and Error Messages

The Ultra Fluid Cart display provides the operator feedback for common operating errors encountered during the Ultra Evac processing cycle. The most common messages are described below. Please call Dornoch Medical Systems, Inc. at (888) 466-6633 for assistance with any error message.

Warning or Error	Action Required
<b>Leak Detected:</b> This message indicates that there has been a leak detected within the Ultra Evac. The unit alarms at the end of the cycle when cart has completed the cleaning and disinfection process.	Check all supply lines for correct connection. Call service if necessary.
<b>Replace Bleach:</b> This message indicates that the unit has run out of bleach. The unit alarms at the end of the cycle and when replaced will go back and disinfect the cylinders as necessary.	Replace the bleach with a new gallon.
<b>Replace Enzyme:</b> This message indicates that the Enzyme solution has run out. The unit alarms at the end of the cycle when the reservoirs have completed the cleaning and disinfection process.	Replace the enzyme with a new gallon.
<b>Valve Error:</b> This message indicates one of the Evac valves is not operating properly. The error displays after the reservoirs have completed the cleaning and disinfection process.	Contact service with the specific valve error.

## Troubleshooting Guide

### **Problem: Unit Will Not Operate**

#### **Possible Solutions:**

1. Check that the machine is plugged into an operational outlet.
2. Call maintenance to replace the Unit internal fuses.

### **Problem: Coupler Engages but Cart Will Not Power Up**

#### **Possible Solutions:**

1. Remove the coupler and try again.
2. Clean the electrical contacts with a cotton swab and alcohol. Try to activate the cart again.
3. Call Dornoch Medical Systems, Inc. at 1-888-466-6633.

### **Problem: Chemical Flow Error Even With New Gallons**

#### **Possible Solutions:**

1. Clean chemical pickup tubes in warm water.
2. Call Dornoch Medical Systems, Inc. at 1-888-466-6633.

### **Problem: Reservoirs are Not Washing**

#### **Possible Solution:**

1. Verify the water to the unit is turned on.
2. Check for any crimps in the black water line to the coupler on the back of the Evac.
3. Call Dornoch Medical Systems, Inc. at 1-888-466-6633.

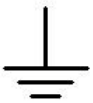


## Symbols & Labels

The explanation and location of all Labels, Safety Signs, Symbols and Displays used on the equipment is presented below.



**Protective Earth Ground Symbol** – This label is used to symbolize a protective earth ground location on the unit. There is one located on the ground from the main power cord and another located on the ground for the 24VDC power supply. There is also one located on the ground wire from the coupler.



**Functional Earth Ground Symbol** – This label is used to symbolize a functional earth ground. They are located near all functional grounds.

**Electrical Requirements and Serial Number Label** - Located on the back of the unit upper right corner (as facing the back). Information contained on this label: Dornoch contact information, serial number, ETL compliance information, patent information.

Dornoch Medical Systems, Inc.  
200 NW Parkway Riverside, MO 64150  
[www.dornoch.com](http://www.dornoch.com) (888) 466-6633

Serial Number

This equipment complies with and is Listed under the IEC-60601-1 (2<sup>nd</sup> Edition) Standard for a Class 1 Medical Device.

Ultra Transposal Evacuation Unit  
115 – 120 VAC 60 Hz  
Nominal 0.2 – 6.0 A  
Momentary Peak 8.8 A

This equipment complies with and is approved for use under:  
IEC-60601-1: General Requirements for Safety  
IEC-60601-1-1: Safety Requirements for Medical Electrical Systems  
IEC-60601-1-2: Electromagnetic Compatibility - Requirements and Tests  
IEC-60529 rating certification of IP42

Patent Pending



Power connection must be connected to a Hospital Grade power receptacle only.

**Operating Instructions** – Located on the back of unit near the power cord. The label is used to instruct the user to the manuals as well as inform them of the power outlet requirements of the unit.

WASTE

**Waste Label** – This label is used to identify the waste line where it exits the rear of the unit. This label is located next to the waste line on the rear of the unit.

HOT WATER

**Hot Water Label** – This label is used to identify the hot water line where it enters the rear of the unit. This label is located next to the water line on the rear of the unit.

ENZYME

**Enzyme Label** – This label is used to identify the inlet location of the enzyme line. This label is located next to the enzyme line on the rear of the unit.

BLEACH

**Bleach Label** – This label is used to identify the inlet location of the bleach line. This label is located next to the bleach line on the rear of the unit.

# Installation

## Protective Packaging & Unpacking

Special measures are needed for and during transport of the unit. Transposal Ultra Evacs are equipped with four adjustable legs. Ultra Evacs should be put on a cart or dolly for transporting during installation/de-installation. Adjustable legs are adjusted to level the unit during installation.

To obtain information on transporting and temporary storage considerations call Dornoch Medical Systems, Inc. at 888-466-6633.

Premature unpacking of the Ultra Evac could risk damage to or loss of the installation items that may be sent with the unit. Contact customer service if unpacking the unit is necessary.

## Site Preparation

A Dornoch Installation Engineer is responsible for the physical hook-up, on-site quality control testing and the initial start up of Ultra Evac equipment. Customers are responsible for preparing the equipment space and utilities at the installation site.

All equipment sites must be prepared in accordance with the requirements described here at least seven (7) days prior to scheduled system installation.

This section outlines the general and specific site preparation requirements for space, water, drain, and electrical needs are presented below. Figure 9 presents an architectural drawing of site requirements. Please use these figures as a reference for proper site preparation.

## Utilities Needed for Installation

**Table 2**

<b>Power</b>	115-120VAC, 60Hz, 15amp
<b>Water Supply</b>	3/4" Hot, 55psi, 6.0gpm,
<b>Water Temperature</b>	Minimum 110°F, Maximum 120 °F
<b>Drain</b>	1 1/2" – 2"
<b>Space</b>	24"W x 20" D x 33"H

### Space

The Ultra Evac installation site must be a minimum of 24" W x 20" D x 33" H. Ultra Evac must be installed no less than 6 inches from the wall to accommodate operator access to the unit's main power supply wall outlet.

### Water Supply

The Ultra Evac requires a hot water supply running at a minimum of 3.0 gpm and 55 psi. Hot water temperature should not exceed 118°F, as damage to the unit could occur. Hard water in excess of 5.0 grains per gallon can adversely affect equipment operation. Consequently, hard water must be treated before it enters installed equipment. Untreated hard water supplies will void equipment warranties.

A 3/4" supply is desirable because of the volume of water it carries, but a 1/2" line is usually sufficient as long as the facility has good water pressure (55 psi or higher at the unit). Hot supply pipe should run up or down the wall to the left side of the space where the machine will be installed, ending 48" to 58" from the floor. Attach a threaded 1/2" FPT ball valve to the end of the supply pipe.

### Electrical

The unit's electrical supply must be within 36" of the unit location. A ground fault receptacle rated at 115 to 120 VAC, single phase at 60 Hz and 15 amps is required. The Ultra Evac draws a peak current of 8.8 amps with a normal operating current draw of 0.2 to 6.0 amps.

### Sanitary Sewer (Drain)

The Cart Evac Unit requires a 1-1/2" to 2" PVC or copper sanitary sewer drain connection. The ideal drain is centered on the install site, 6" to 15" from the floor and has an attached trap. The drain can protrude vertically out of the floor or horizontally from the wall. Drainpipes brought up through the floor should stay as close as possible to the wall. Wall drains should not protrude more than 6" from the wall. The drain shall be trapped and have a 16" long standpipe.

A mop sink or hopper may be used in lieu of the above specification.

Backflow Preventers

The Backflow preventer is integrated into the Ultra Evac Unit. It requires no drain hook-up. Consult local regulations for specific requirements.

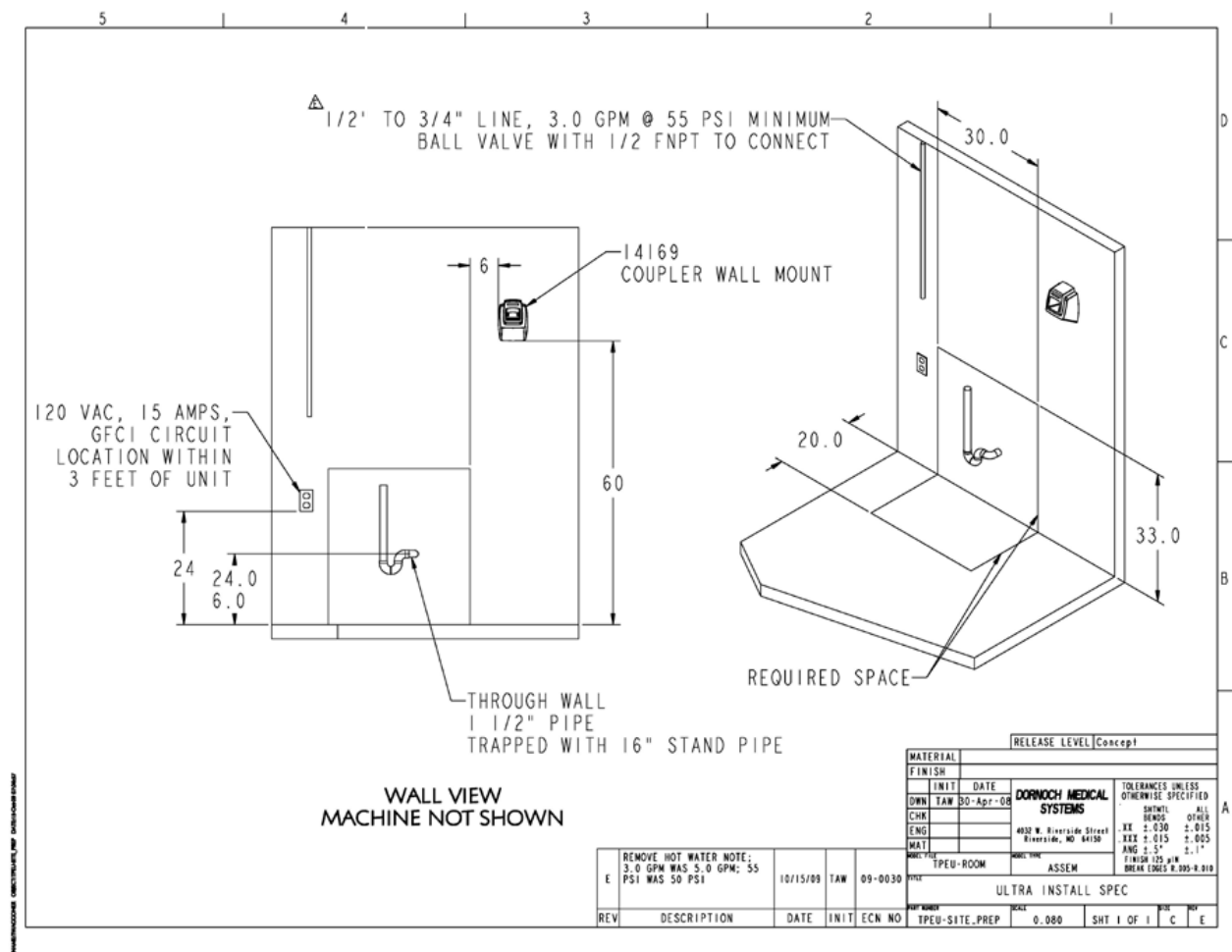


Figure 9 – Ultra Evac Architectural Drawing

# De-install/Disconnect Instructions

Please contact Dornoch Medical Systems, Inc. at 888-466-6633 prior to de-installation or re-installation of Ultra Evac units.

If a Customer de-installs or re-installs an Ultra Evac, the guidelines listed below must be followed.

- Always wear personal protective equipment (PPE), including eye protection and latex gloves, to prevent contact with potentially infectious material.
- Always unplug the unit from the wall electrical receptacle before moving equipment.
- Wipe down the unit with an approved contact disinfectant after each use.

## Equipment Storage

Temperature range for proper storage is  $-20^{\circ}\text{C}$  to  $40^{\circ}\text{C}$ . If unit is to be taken out of service and stored for a prolonged period of time, evacuate water from the hot and cold water manifolds, as well as removing the bleach and enzyme solution from their chemical tanks regardless of temperature within storage facility.

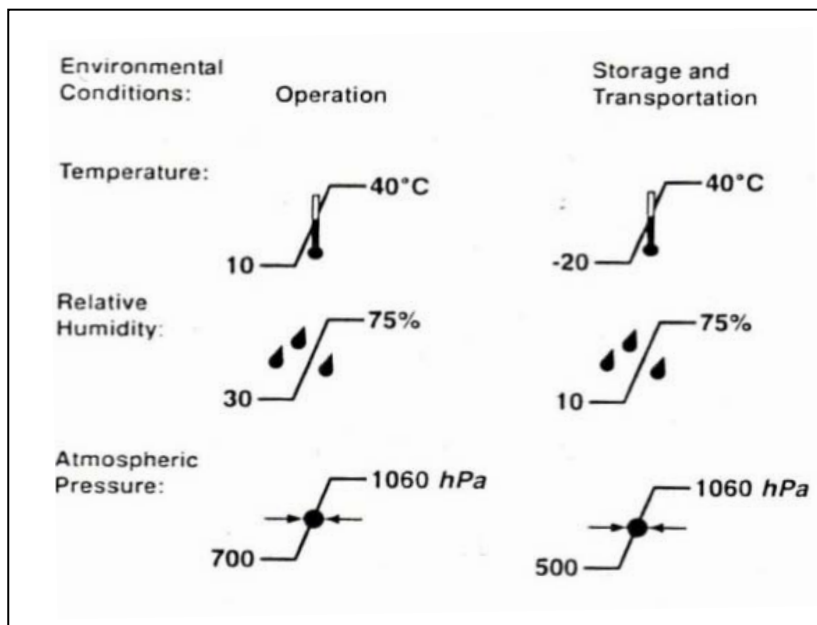


Figure 10 – Environmental Conditions

# Maintenance

## Qualifications for Service Personnel

Service personnel will be trained during the installation of the equipment on preventative maintenance, troubleshooting and common problems. Support for the service technicians is always available by calling Customer Service at 888-466-6633.

Qualifications needed to properly service products manufactured by Dornoch Medical Systems Inc. in no way allows for or authorizes any person to avoid the authorities with jurisdiction to impose additional requirements for qualifications on Service Personnel.

DMS recommends that all facilities service and healthcare professionals attend the Maintenance & In-Service Training sessions offered during the time of equipment installation.

All maintenance to be performed by qualified personnel only. Repairs by unauthorized individuals should not be attempted and may result in damage to or malfunction of the system or even personal injury.

## Service Warnings

Warning: Modification of this equipment is not allowed.

Warning: When performing any service or maintenance procedures on the Ultra Evac, follow all manufacturers' instructions.

Warning: Handling biohazard waste is potentially dangerous. Wear personal protective equipment when servicing the Ultra Evac.

Warning: Prior to performing any maintenance on the Ultra Evac, unplug the unit from the wall outlet. Not unplugging this unit will leave dangerous voltages & current accessible to the service personnel working on or in this machine.

Note: If the unit is to be moved, wipe down the outside of the unit with an approved hospital grade contact disinfectant.

Note: Remove all fluids from the bottom of the unit's cabinet before returning equipment to service. The unit's leak detection circuit will alarm if any fluid remains after service.

## Additional Information

Upon request Dornoch will provide the following: Circuit Diagrams, Component Parts List, Description of Components, Calibration Instructions, and any parts information needed for repair of the unit.

# Routine Maintenance

## Front Panel Removal

Call Dornoch Medical Systems, Inc. at 888-466-6663 prior to removing or servicing any components that require the front panel to be removed. Removal of the front panel will allow access to the electrical components underneath. Once removed the possibility of electrical shock is present. Use caution when performing any service to these components. To take off the front panel, remove the two screws on either side of the green top and raise the top. Remove the two screws on either side of the front panel near the bottom of the unit at the back edges of the panel. Lift the panel up and out to remove. Note: This panel has a ground wire attached to it.

## Inspections

Regularly visually inspect the unit for any signs of damaged or leaking components. If any problems are found, contact Customer Service at 888 466-6633 to report findings.

# Replacement Items

## Power Supply

There is not a substitute power supply replacement. The power supply must be replaced with the following:

- Manufacturer: Condor
- Model #: GLM75 Medical

Contact Dornoch Medical Systems, Inc. for replacement parts at 888-466-6633.

## Replacement Fuses

Two sets of replacement fuses are located on the main circuit board. Fuse specifications are as follows:

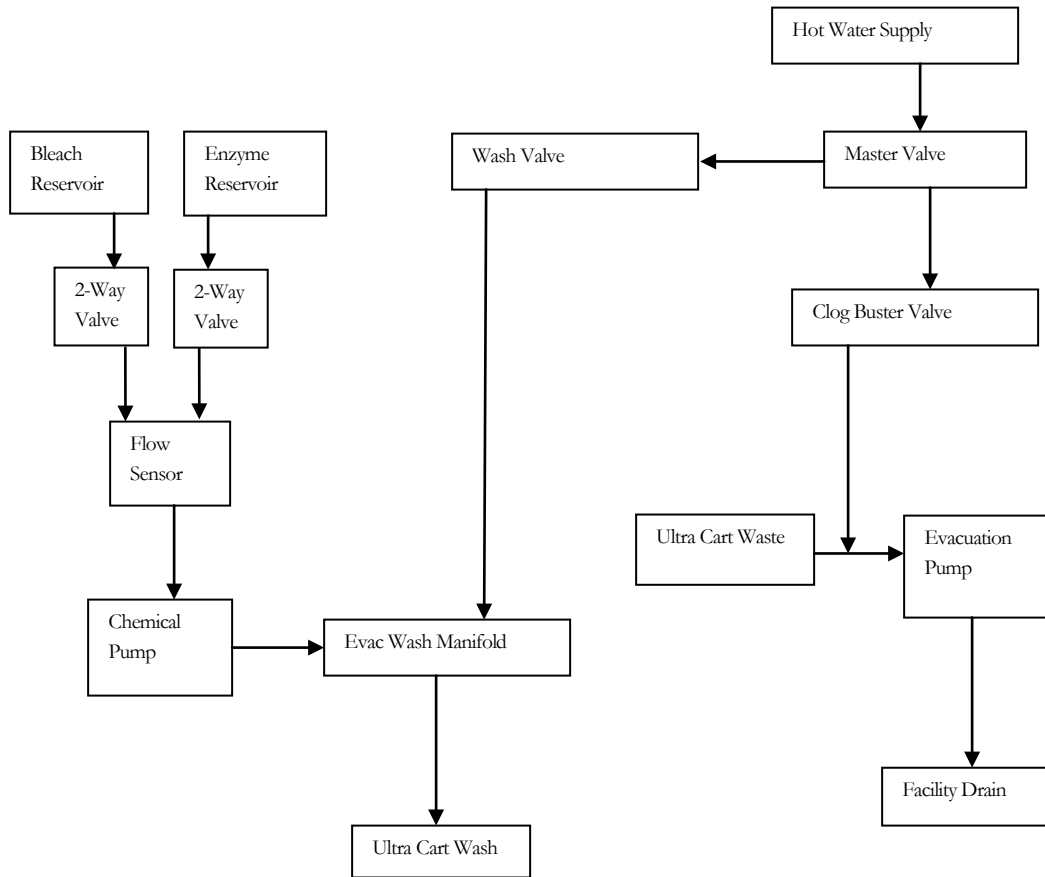
- Fuse Replacement for the main ICB Power- LT8L250V time delayed fuse.
- Fuse Replacement for the booster pump- LF5A/250P time delayed fuse.
- Spare fuses are also provided for both of the above listed fuses.

## Power Cord Replacement

Contact Dornoch for replacement only (see components part list), Procedure for replacement (correct connection & anchoring) are provided with the replacement power cord.



# Fluid Paths and Wiring Diagrams



**Figure 11 – Evac Fluid Flow Diagram**

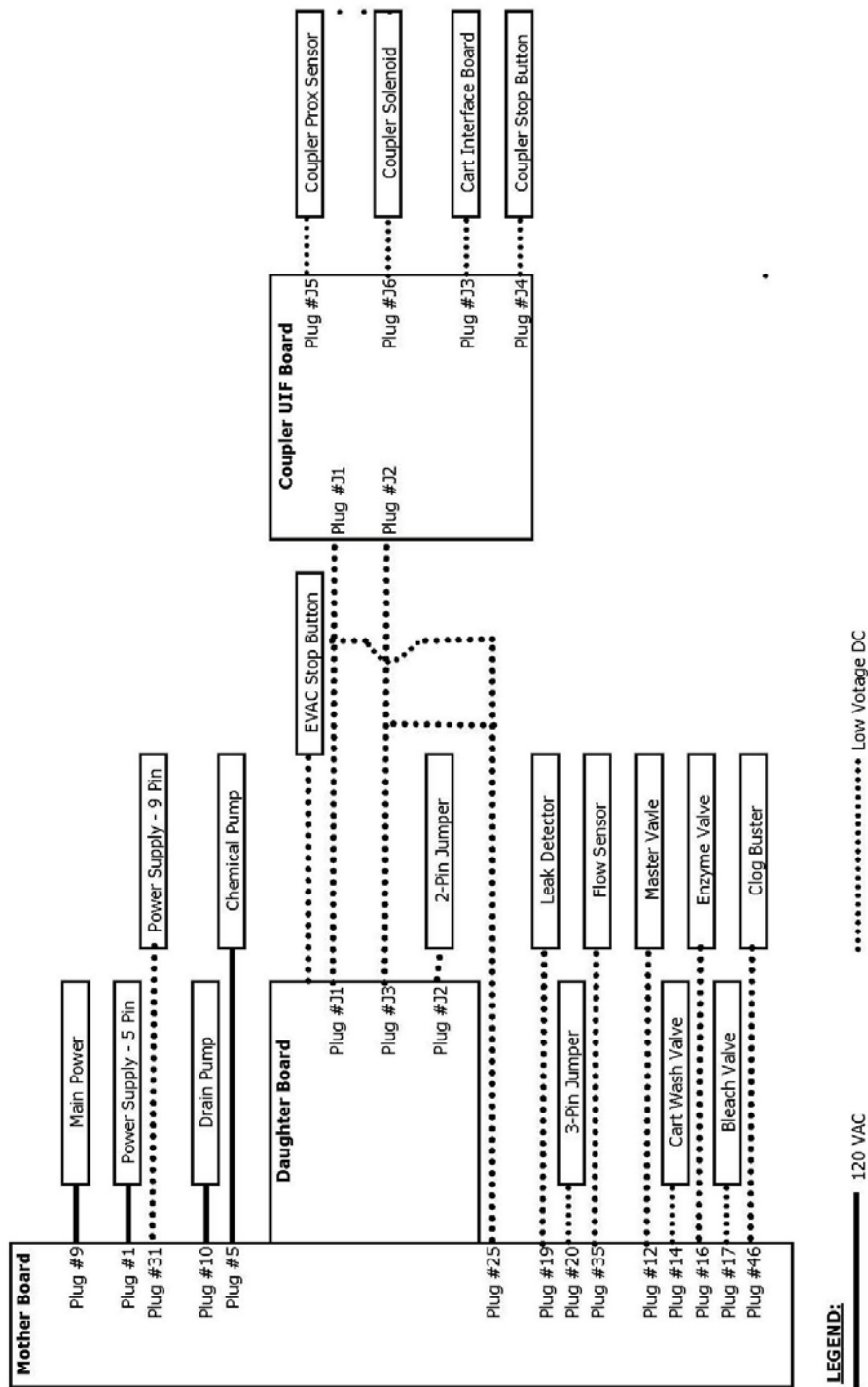


Figure 12 – Evac Wiring Diagram

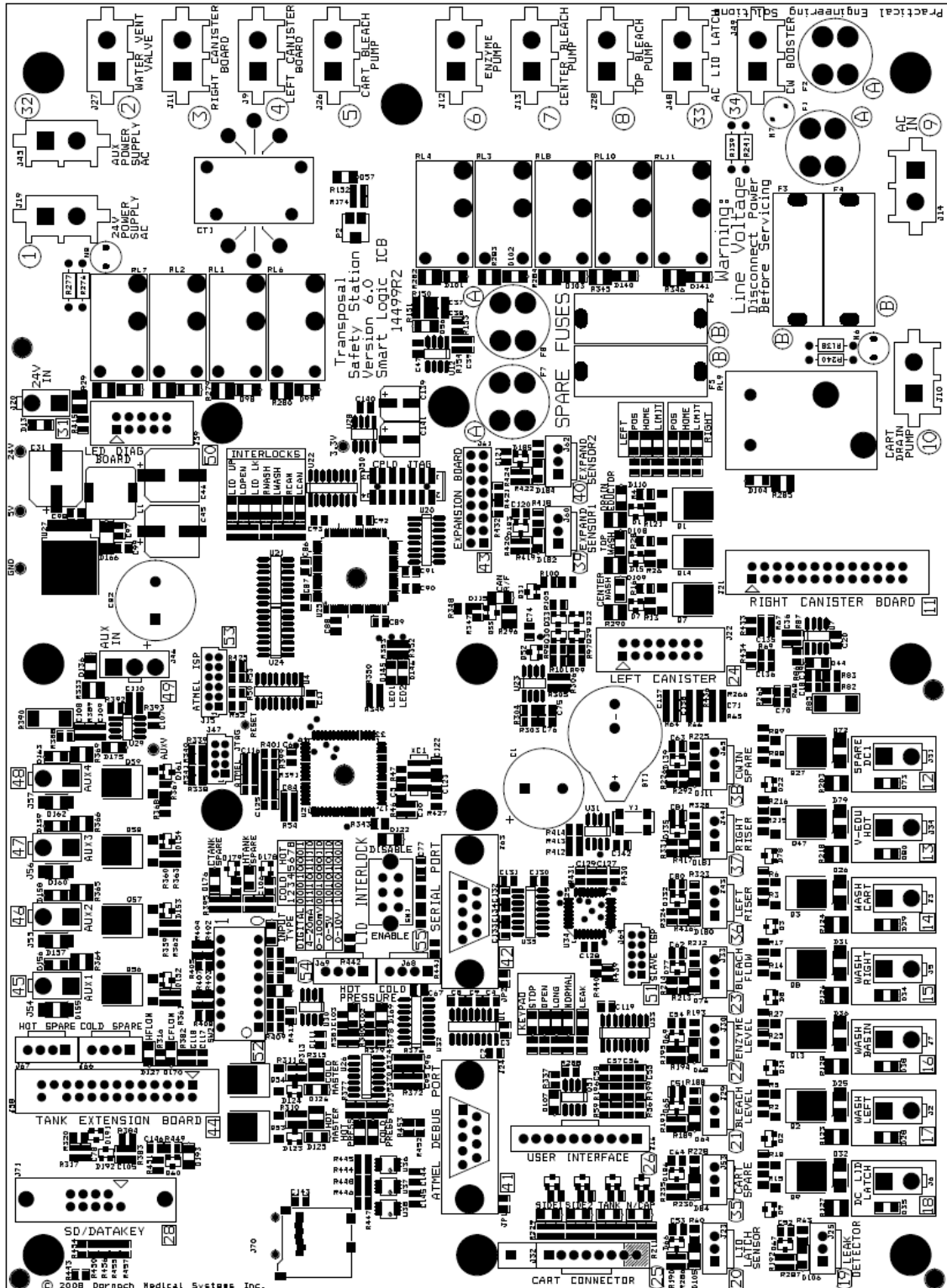


Figure 13 – Evac Board Schematic

# Preventative Maintenance

The Ultra Evac preventative maintenance schedule is presented below. Preventive maintenance parts kits can be ordered directly from Dornoch by calling 888-466-6633.

## Ultra Evac Preventative Maintenance Schedule

**Table 3**

Procedure	Year End				Required Parts	
	1	2	3	4	Part #	Quantity
Annual PM Kit	X	X	X	X	PM-007	1
Replace Solenoid Valve		X		X	12520	3

Note: Preventative Maintenance Procedures are available upon request by contacting Customer Service at 888-466-6633.

# Company Information

Dornoch has been helping healthcare facilities responsibly manage infectious fluid waste since 1997. Starting out as the premier manufacturer for fluid waste management systems in the country, we now have installations in leading healthcare facilities nation-wide.

Dornoch was founded in 1995. Products are manufactured and shipped from a centralized facility and supported by a nation-wide sales force. The company's principals include individuals with extensive backgrounds in product development, management, production, and sales of medical/surgical products. Jim Dunn, a successful inventor who served as an operating room nurse for 20 years, helped design Dornoch's products.

## Contact Information

Dornoch Medical Systems, Inc.

Shipping Address:

200 NW Parkway  
Riverside, MO 64150

Office Correspondence:

P.O. Box 681656  
Riverside, MO 64168

Toll free: 888.466.6633

Phone: 816.505.2226

Fax: 816.505.1050

Web: [www.dornoch.com](http://www.dornoch.com)

# Limited Warranty

Dornoch Medical Systems, Inc. (hereinafter 'DMS') warrants each new Transposal Product (as listed in the Transposal Product Guide, published by DMS from time to time) which is identified as "capital equipment" on the Purchase Agreement or Trial Agreement entered into in connection herewith, to be free from defects in materials and workmanship under normal use and service for a period of one (1) year from the date of installation (the "Term"). Both parts and labor are covered for the one-year period per the conditions below.

Notwithstanding the foregoing, if any Transposal Product requiring installation is not installed by a DMS Customer Service Engineer, the term of this limited warranty shall begin 14 days (two weeks) after the date the Transposal Product has been shipped by DMS. And for any Transposal Product which does not such installation, the Term of this limited warranty shall begin three (3) days after the date the Transposal Product has been shipped by DMS. Any replacement part, including a user-installed part that has been installed in accordance with instructions provided by DMS, is subject to this limited warranty for the period remaining in the Term for the subject Transposal Product.

NOTWITHSTANDING ANYTHING TO THE CONTRARY, DMS DOES NOT WARRANT ANY OF THE FOLLOWING THAT MAY BE SHIPPED WITH OR AN INTEGRAL PART OF ANY TRANSPOSAL PRODUCT OR SUPPLIES REQUIRED TO OPERATE OR INSTALL ANY TRANSPOSAL PRODUCT: (I) ITEMS AND PRODUCTS NOT MANUFACTURED BY DMS, INCLUDING, BUT NOT LIMITED TO ENZYMATIC CLEANER, TUBING, AND ANY BACKFLOW PREVENTER; (II) ITEMS AND PRODUCTS DESIGNED FOR SINGLE USE, INCLUDING BUT NOT LIMITED TO, CANISTER LIDS AND CART LIDS; AND (III) ITEMS AND PRODUCTS IDENTIFIED AS "CONSUMABLE/CONVERSION SUPPLIES" ON A PURCHASE AGREEMENT OR TRIAL AGREEMENT ENTERED INTO IN CONNECTION HEREWITH.

DMS' liability shall be limited, at its sole option and expense, to repair or replace during DMS' normal service hours any Transposal Product which has been examined by DMS and found, in the sole discretion of DMS, to be defective. The maximum liability of DMS to any person whatsoever arising out of or in connection with the sale or use of its equipment, whether such liability arises from a claim based upon contract, warranty, tort, or otherwise, shall in no case exceed the actual value of the equipment paid by the purchaser. DMS shall not be liable to the purchaser or to any other person or entity for incidental or consequential damages.

DMS reserves the right to replace defective parts or equipment with parts which may not be identical to the original equipment or parts. Said replacement parts or equipment shall be, in the judgment of DMS, equal to or better in performance than parts or equipment initially furnished.

THIS EXPRESS LIMITED WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE IMPLIED WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE AND MERCHANTABILITY.

DMS reserves the right to discontinue any Transposal Product, incorporate new features, specifications, colors, etc., at any time without incurring obligations to provide similar equipment or features on previously sold models of equipment or parts.

This warranty applies to the original purchaser only and is not transferable, except to the end user in a lease financed transaction, and then, if and only if, and to the extent specifically approved by DMS in writing.

This limited warranty shall be construed and interpreted in accordance with and governed by the internal laws of the State of Missouri (without giving effect to Missouri choice or conflict of law principles).

PURCHASER IRREVOCABLY AGREES THAT, SUBJECT TO DMS' SOLE AND ABSOLUTE DISCRETION, ALL ACTIONS OR PROCEEDINGS IN ANY WAY ARISING OUT OF OR RELATED TO THIS LIMITED WARRANTY WILL BE LITIGATED IN COURTS HAVING SITUS IN KANSAS CITY, MISSOURI. PURCHASER HEREBY CONSENTS AND SUBMITS TO THE JURISDICTION OF ANY COURT LOCATED WITHIN MISSOURI.

THIS WARRANTY SHALL BE VOIDED IF (I) ANY PARTY OTHER THAN A DMS CUSTOMER SERVICE ENGINEER REPAIRS OR REPLACES OR ATTEMPTS TO REPAIR OR REPLACE ANY TRANSPOSAL PRODUCT OR PARTS AND DOES NOT FOLLOW SPECIFIC INSTRUCTIONS PROVIDED BY DMS FOR SUCH REPAIR OR REPLACEMENT OF PARTS OR (II) ANY TRANSPOSAL PRODUCT (A) IS NOT USED IN ACCORDANCE WITH INSTRUCTIONS PROVIDED BY DMS (including water hook-ups at hardness levels above five (5) grains per gallon), (B) IS NOT ACCORDED REASONABLE TREATMENT BY THE PURCHASER OR (C) IS USED IN A MANNER INCONSISTENT WITH THE FOLLOWING: TRANSPOSAL ULTRA EQUIPMENT MUST NOT BE USED TO DISPOSE OF ANY SOLID MATERIAL, INCLUDING BUT NOT LIMITED TO NEEDLES, SYRINGES, HARDENED CASTING MATERIAL, TISSUE OR ANY OTHER SOLID OR SEMI-SOLID. SHOULD ANY TRANSPOSAL PRODUCT BE USED IN A MANNER INCONSISTENT WITH THE FOREGOING AND A DRAIN BLOCKAGE OCCURS, THE PURCHASER SHALL BE SOLELY RESPONSIBLE FOR THE COST OF ALL REPAIRS OF THE TRANSPOSAL EQUIPMENT AND OF ANY FACILITY DRAINAGE SYSTEMS AND ANY OTHER RELATED DAMAGE.